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Taxonomic studies on the genus *Grandidierella* Coutière (Crustacea, Amphipoda) II. The Malagasy species

by Alan A. Myers *

Abstract. — A review is given of the Malagasy species of the amphipod crustacean genus *Grandidierella* Coutière. *G. spinicoxa* sp. nov. is described and figured and its relationship to *G. mahafalensis* Coutière is discussed.

Résumé. — Étude d'une petite collection de *Grandidierella* de Tuléar, sud-ouest de Madagascar. Il apparaît que le matériel présente de grandes affinités avec *G. mahafalensis* Coutière, mais qu'il en diffère par certains caractères importants. Il est complètement décrit et figuré sous le nom de *G. spinicoxa* sp. nov. L'espèce correspond aux spécimens brièvement décrits par Barnard (1958) de Mohéli (Comores), ce qui montrerait sa large distribution. Les autres représentants du genre signalés de Madagascar sont mentionnés.

INTRODUCTION

The genus *Grandidierella* Coutière (1904) was described to accommodate a species of amphipod (*G. mahafalensis* Coutière) from the land-locked saline lake Tsimanampetsotsa in the Mahafaly region of S-W Madagascar. Coutière (1904) remarked that it would be most interesting to compare his material with marine examples from the adjoining West Coast, but although the genus has been rather widely studied in the world tropics, little work has been carried out on the Malagasy species, appart from that of Monod (1935), Ruffo (1958) who first described *G. bonnieroides* Stephensen (as *G. Bonnieri*) from Soalara and Ledoyer (1967, 1968, 1969).

Recently I received from Pr. Th. Monod, a small collection of a species of *Grandidierella* from Tuléar in S-W Madagascar, together with topotypic material of *G. mahafalensis*. The Tuléar material shows close affinity with *G. mahafalensis* but differs in a number of important characters. It does, however, agree with material rather briefly described by Barnard (1958) from Mohéli in the Comoro islands, which suggests the possibility of a wide distribution for this species at least along the Western coast of Madagascar and the islands of the Mozambique channel. The dissimilarity of the isolated lake Tsimanampetsotsa material from that of the widely separate but continuous marine environments at Tuléar and Mohéli would be expected, but whether the long isolation in the lake [1] has resulted in full speciation or merely sub-speciation is impossible to ascertain without

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1. According to Pr. René Battistini, the age of lake Tsimanampetsotsa is at least 75,000 years.

further research on living material. Considering the constant differences between Tuléar and lake Tsimanampetsotsa material it would seem most practical to describe the fully marine material as a new species, here proposed as *G. spinicoxa* sp. nov., whilst at the same time noting the close affinity of the two species.

THE MALAGASY SPECIES

Grandidierella bonnieroides Stephensen

Grandidierella bonnieroides Stephensen, 1948 : 12-16, fig. 3 ; Myers, 1970 : 141, fig. 1-2.
Grandidierella bonnieri Ruffo, 1958 : 58, fig. 8-9 ; Ledoyer, 1967 : 137, fig. 28a ; 1968 : 53, fig. 25b
(Non) *Grandidierella bonnieri* Stebbing, 1908 : 120-123, pl. 6.

Discussion. — This species is well described and figured from Madagascar by Ruffo (1958) and Ledoyer (1967). For a discussion and revised synonymy of this species see Myers (1970).

Recorded distribution in Madagascar : Soalara (Ruffo, 1958), Tuléar (Ledoyer, 1967).

Grandidierella grossimana Ledoyer

Grandidierella grossimana Ledoyer, 1968 : 53, fig. 25a.

Discussion. — *G. grossimana* differs from all other Malagasy species in the structure of the male gnathopod II in wich the carpus is relatively short and broad, the postero-distal margin produced into a weakly developed tooth, and the propodus broad, approximately parallel sided with a transverse palm. Other diagnostic features include the configuration of the male gnathopod I and the structure of the antennule (for which see Ledoyer, 1968).

Recorded distribution in Madagascar : Tuléar.

Grandidierella mahafalensis Coutière

Grandidierella mahafalensis Coutière, 1904 : 166-170, fig. 1-19 ; Ruffo, 1958 : 55, fig. 7-8.
Grandidierella megnae Monod, 1935 : 464-465.
(Non) *Grandidierella megnae* (Giles), 1888 : 231-235, pl. 8, fig. 1-4.

Discussion. — For a recent review and appraisal of this species see Ruffo (1958). The female gnathopod I figured by Ruffo, 1958 (fig. 7, 4-5), does not appear to be of the usual form for the female of this species, more closely resembling the developing gnathopod of a young male. Since the gnathopod is from an ovigerous female it probably represents an intersex. Normal female and male gnathopods, male coxae I and II and uropod III

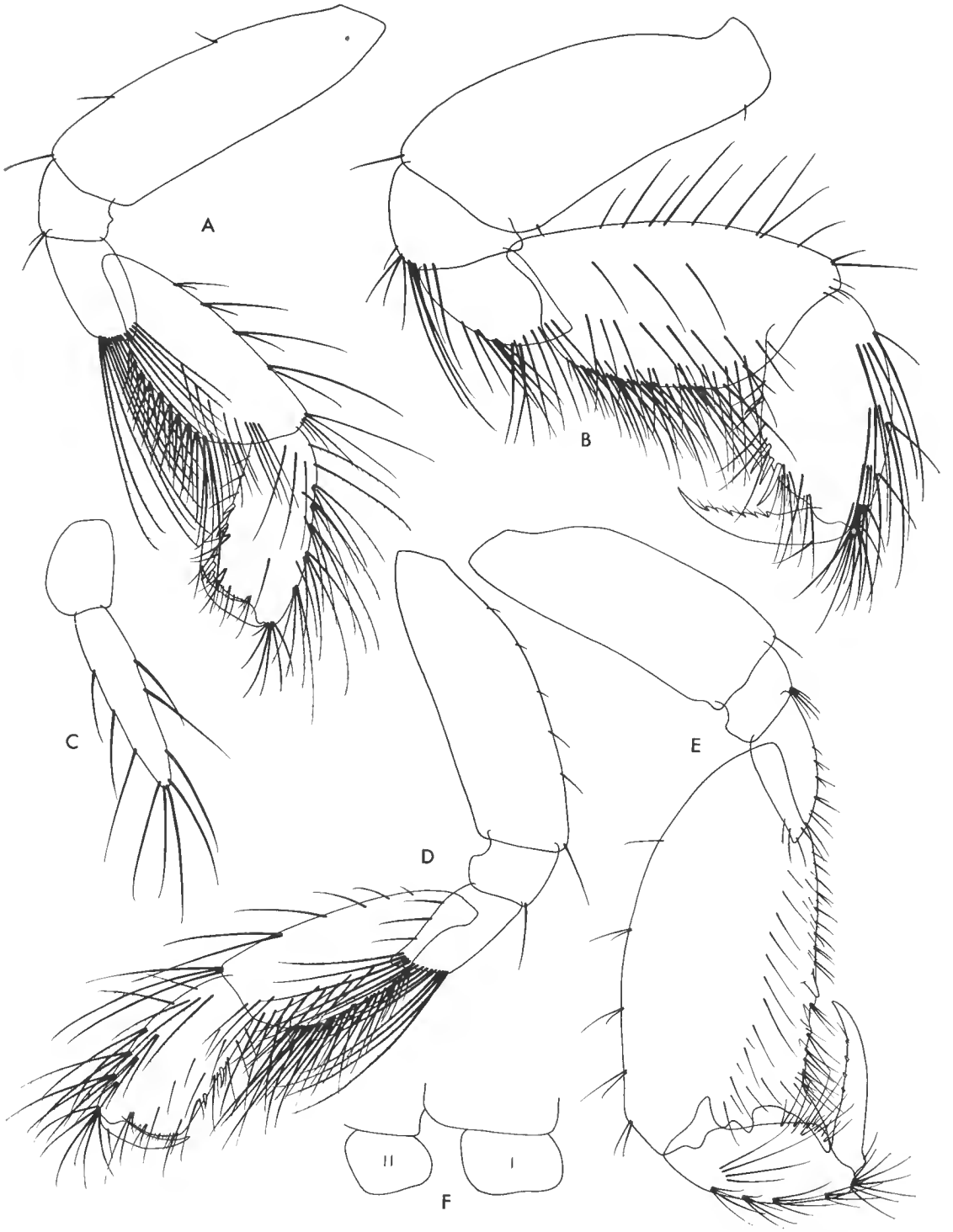

Fig. 1. — *Grandidierella mahafalensis* Coutière, Lake Tsimanampetsotsa.
A, ♀ Gnathopod II ; B, ♀ Gnathopod I ; C, Uropod III ; D, ♂ Gnathopod II ; E, ♂ Gnathopod I ; F, ♂ Coxae I & II.

are figured here (fig. 1 A-F) for comparison with the corresponding appendages of *G. spinicoxa* sp. nov.

Recorded distribution in Madagascar : Lake Tsimanampetsotsa.

Grandidierella spinicoxa sp. nov.

Grandidierella mahafalensis Barnard, 1958 : 105, fig. 19.
Grandidierella bonnieri Ledoyer, 1969 : 186, fig. 3.
(Non) *Grandidierella bonnieri* Stebbing, 1908 : 120-123, pl. 6.

Description of male. — Length 8.0 mm ; *head* shorter than first two pereon segments combined, lateral cephalic lobes well developed, rounded, eye ovoid ; *pereon* segment I with a well developed, forwardly curving, mid-ventral, sternal tooth ; *antenna* I about equal to the body length, basi-distal ratio of peduncular articles, approximately 5:6:1, flagellum longer than peduncle, with 25-30 articles, accessory flagellum uni-articulate, about equal to one half the length of the first flagellar article of the primary flagellum ; *antenna* II subpediform, two thirds the length of antenna I, peduncular article 4, longer and broader than 5, flagellum less than one half the length of the fifth peduncular article, with about 7 articles, the basal articles scarcely constricted ; *mouthparts* not differing significantly from those of *G. mahafalensis* ; *gnathopod* I coxa shallow, the anterior distal corner produced into a rounded tooth, basis robust, the posterior margin sinuous, carpus subovoid, the posterior distal angle produced into a well developed outwardly deflected tooth, a second small blunt tooth on the distal margin, posterior to the inserted propodus, and a further, more slender tooth on the posterior margin, the posterior margin between the posterior marginal tooth and the distal tooth, irregularly serrate, propodus slender, short, broader distally, the palmar angle produced into a forwardly projecting rounded tooth, dactylus equal in length to the propodus and hence greatly overlapping palm, the posterior margin produced basally into a blunt lobe, and with a small tooth midway between lobe and tip ; *gnatopod* II coxa subtriangular, the anterior distal corner produced into a small pointed tooth, basis elongate and slender, merus with a distal row of long pectinate setae, carpus elongate, about three times as long as broad, the anterior margin bearing a ' brush ' of very fine setae inserted into relatively large and conspicuous bases, propodus about two thirds the length of the carpus with a series of spines on the distal portion of the posterior margin, palm almost transverse, dactylus overlapping palm ; *pereopods* III-VII scarcely differing from those of *G. mahafalensis* ; *uropod* I peduncle equal in length to the rami, the ventral distal margin produced into a curved tooth, rami subequal, spiniferous on the anterior dorsal margin ; *uropod* II peduncle shorter than rami, the outer ramus slightly the longer, both rami spiniferous on the anterior dorsal margin ; *uropod* III peduncle very short, the posterior (inner) margin

Fig. 2. — *Grandidierella spinicoxa* sp. nov., Tuléar.

A, ♂ Head and pereon segments I & II, with a, coxae I & II, b, accessory flagellum of antenna I and c, flagellum of antenna II ; B, ♂ Gnathopod I with d, palm of propodus ; C, ♂ Gnathopod II (distal-most setae of anterior margin of carpus omitted to show bases), with e, palm of propodus ; D, ♀ Gnathopod II.

A
I
a
II
c
B
b
C
D
d
e

expanded into a flange, the single ramus slightly over twiee the length of the pedunele, with a series of stout setae on the anterior and posterior margins and a terminal group of stout setae ; *telson* similar to that of *G. mahafalensis.*

Description of female. — Length 7.0 mm ; similar to the male, but *pereon* segment I without a sternal tooth, antennae shorter, *antenna* I equal to about one half the body length, primary flagellum with 16-20 artieles ; *antenna* II about two thirds the length of antenna I ; *gnathopod* I coxa shallow, unprodueed, basis slender, about three times as long as broad, carpus about two times as long as broad, propodus shorter than the carpus with a series of moveable spines or the posterior margin, daetylus robust, overlapping palm ; *gnathopod* II coxa subtriangular, unproduced, basis slender, merus with a distal row of long peetinate setae, earpus slender with a single row of long setae on the anterior margin, propodus slightly shorter than the earpus, daetylus fitting palm.

Type loeality : Tuléar, S-W Madagasear.

Material examined : 4 ♂, 3 ♀.

Holotype : M.N.H.N., nº 7229.

Discussion. — *G. spinicoxa* sp. nov. is elosely related to *G. mahafalensis* Coutière, but differs in the following important eharaeters : Male gnathopod I carpus more ovoid, the posterior distal margin strongly serrate, propodus with a well developed palmar tooth, daetylus euriously lobed and toothed on the posterior margin. Male gnathopod II with a ' brush ' of fine setae on the anterior margin, caeh seta with a large, eonspieuous round point of insertion. Male coxae I and II eaeh with a distinct tooth at its anterior distal eorner. Uropod III ramus broader with more robust, stout setae.

Ledoyer (1969) noted that not all the speeimens in his sample of *G. spinicoxa* (as *G. bonnieri*) had well developed eoxal teeth and suggested that this was a ease of polymorphism. It seems more likely, however, that those speeimens with eoxal teeth represent terminal males, those without teeth, the non-terminal males, sinee male amphipods continue to differentiate morphologieally long after attaining sexual maturity. In Aoridae and related families, terminal males may be rare or even absent from an entire population, and this oeeurenee of ' neotonous ' populations presents eonsiderable difficulties to taxonomie studies.

Ecology : In the inter-tidal zone among the sea grasses *Syringodium isoetifolium*, *Halophila minor*, *Diplanthera beaudettei*, *D. uninervis*, *Zostera capensis*, *Cymodocea serrulata* and *Thalassia* spp.

Distribution : Tuléar (Madagasear), Mohéli (Comoro Islands).

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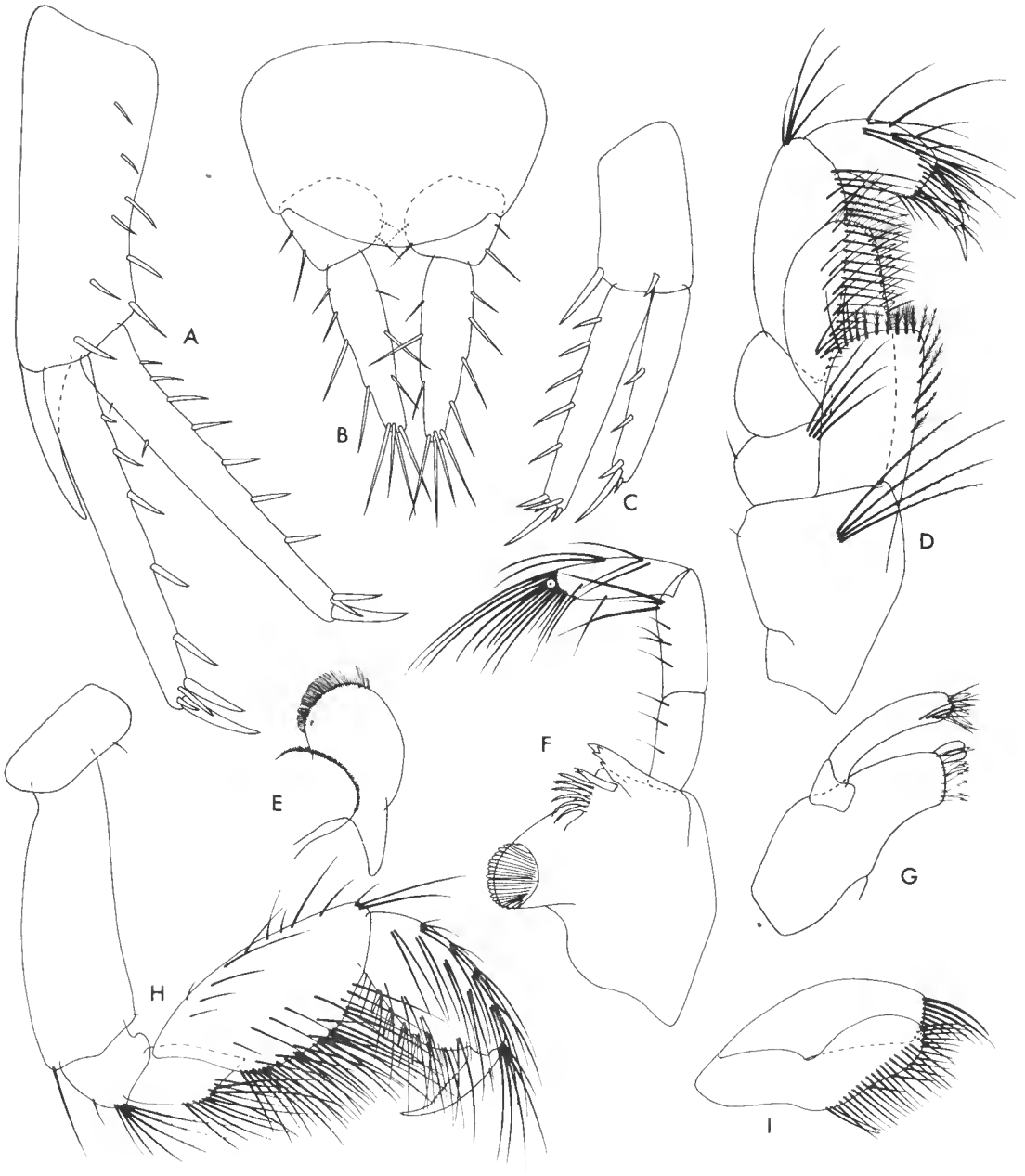

Fig. 3. — *Grandidierella spinicoxa* sp. nov., Tuléar.

A, ♂ Uropod I ; B, ♂ Uropod III & Telson ; C, ♂ Uropod II ; D, Maxilliped ; E, Labium ; F, Mandible ; G, Maxilla I ; H, ♀ Gnathopod I ; I, Maxilla II.

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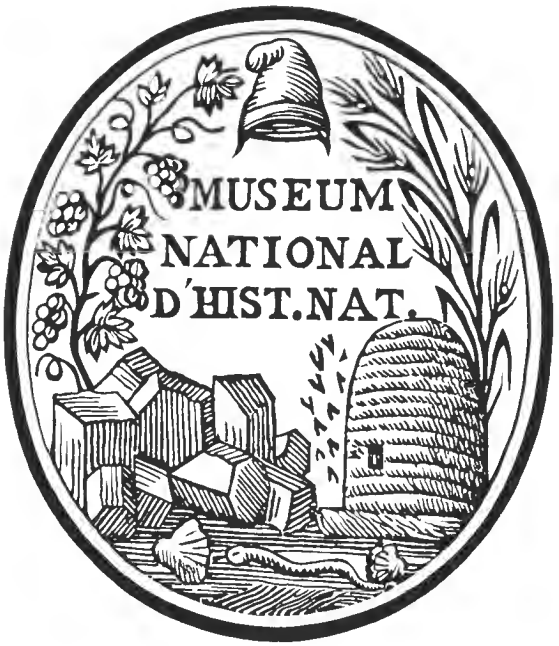
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